

CHAPTER 86. INSPECT A REPAIR STATION'S TOOLS AND EQUIPMENT

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3658 (Revised)

B. Avionics: 5658 (Revised)

3. OBJECTIVE. This chapter provides guidance for inspecting a repair station's tools and equipment and system procedures to ensure compliance with the Repair Station Manual/Quality Control Manual (RSM/QCM) and Title 14 of the Code of Federal Regulations (14 CFR) part 145, § 145.109.

5. GENERAL. The repair station is required to provide, control and maintain the tools and equipment necessary to perform the maintenance, preventive maintenance or alteration under its certificate and operations specifications.

NOTE: In this section, precision tools and test equipment used to make airworthiness determinations will be referred to as **Measuring Tools and Equipment (MTE)**.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 43 and 145
- Successful completion of the Airworthiness Inspector Indoctrination course(s) or equivalent
- Previous experience with certification or surveillance of part 145 repair stations

B. Coordination.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- 14 CFR parts 43 and 145
- Order 8300.10, Airworthiness Inspector's Handbook, Vol. 2, Ch. 162, Procedures for Certifying Part 145 Repair Stations/Satellites Located Within the United States and Its Territories
- 8300.10, Vol. 2, Ch. 164, Evaluate a Repair Station and Quality Control Manual or Revision
- 8300.10, Vol. 2, Ch. 165, Evaluate Part 145 Repair Station Facilities and Equipment
- 8300.10, Vol. 2, Ch. 236, Evaluate Avionics Test Equipment
- 8300.10, Vol. 3, Ch. 144, Inspect Avionics Test Equipment
- Advisory Circular (AC) 43-15, Recommended Guidelines for Instrument Shops
- AC 145-9, Guide for Developing and Evaluating Repair Station and Quality Control Manuals

- AC 43-207, Correlation, Operation, Design and Modification of Turbofan/Jet Engine Test Cells

- HBAW 97-08A, Clarification of 14 CFR Section 145.47(b), Calibration of Inspection and Test Equipment

B. Forms. None.

C. Job Aids. None.

5. PROCEDURES.

A. *Planning.* Prior to inspecting, the PI should carefully review:

(1) 14 CFR parts 43 and 145.

(2) Repair Station Manual/Quality Control Manual (RSM/QCM).

(3) Operations Specifications.

(4) The Safety Performance Analysis System (SPAS) is the organization's primary source of comprehensive, integrated safety information that is used by inspectors, analysts, and managers in developing and adjusting field surveillance, investigation, and other oversight programs. SPAS interfaces with key fielded oversight programs (such as ATOS, SEP, and the NPG), as well as other government and industry sources, collecting raw performance and operational data, analyzing and summarizing the data, and providing critical information in the form of graphs, tables, and reports. These SPAS outputs are then used to (1) identify safety hazard and risk areas; (2) target inspection efforts for repair stations, and to areas of greatest risk; and (3) monitor the effectiveness of targeted oversight actions. SPAS repair station profile and repair station analytical model (RSAM) are available for use. This data provides additional information on performance and risk associated with individual repair station facilities.

(5) CHDO file.

B. *Calibration/Record.* Review the part of the RSM/QCM describing the system and procedures used for calibrating MTE.

(1) The PI will verify:

- The repair station is calibrating MTE, in accordance with the intervals, the system and procedures described in the RSM/QCM
- All MTE is calibrated and traceable to a standard acceptable to the FAA to include those recommended by the manufacturer and the National Institute of Standards and Technology (NIST) or other national authority

NOTE: The 14 CFR part 145 rules states that tooling are calibrated to a standard acceptable to the Administrator. Those standards may be derived from the National Institute of Standards and Technology (NIST), or to a standard provided by the equipment manufacturer. International agreements may also be accepted as a means of compliance. A list of international agreements referred to as Memorandum of Understanding (MOU) or Mutual Recognition Agreement (MRA) may be accessed from the NIST Web site (<http://www.nist.gov/>). Also, the National Voluntary Laboratory Accreditation Program (NVLAP) provides third-party accreditation to testing and calibration laboratories. NVLAP accreditation programs are established in response to Congressional mandates, administrative actions by the Federal Government, or from requests by private-sector organizations. NVLAP is in full conformance with the standards of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), including ISO/IEC 17025 and Guide 58. NVLAP identifies its accredited laboratories in a published directory, NIST Special Publication 810, which is published on the NIST Web site. Additionally, for foreign equipment, the standard of the country of manufacture may be used if approved by the Administrator. An Exemption Authorization is required if a repair station uses equipment of a foreign manufacturer and the method of calibration

it will use is not addressed through a MOU or MRA, or the FAA inspector cannot obtain the validity of the Calibration Laboratory. Exemption authorizations are granted through the issuance of an exemption IAW 14 CFR part 11 guidance. Currently, exemptions of this type are issued for a 2-year period and can be renewed if requested by the repair station.

(2) Also consider the following:

- Does the repair station determine calibration status of new tools or equipment before they are put into service?
- How and when is MTE recalled for calibration?
- Does the calibration and tracking system include employee-owned MTE?
- How does the repair station establish calibration intervals?
- Does the repair station maintain a list of all calibrated equipment by name, model or part number, serial number, date of calibration, and next calibration due date?
- Are calibration records maintained for at least 2 years?
- Is MTE identified to prevent the inadvertent use of non-calibrated equipment in the maintenance process? The identification usually includes the serial number or other identification, date of last calibration, date calibration is due, and the name or initials of the person who performed the calibration?
- Are equipment and tools, that are not used to make airworthiness determinations, identified?
- How does the repair station perform in-house calibration of the repair station's equipment and tools?

NOTE: The tool or test equipment used as a standard for performing calibrations cannot be used to perform maintenance after it is calibrated and before being used as an in-house calibration standard.

C. Manufactures Requirements and Equivalency.

Review the part of the RSM/QCM describing the system and procedures used for ensuring the equipment and tools used to maintain articles are those recommended by the articles manufacturer or the equivalent as accepted by the FAA.

(1) Verify that the repair station is using the system and procedures in the RSM/QCM for ensuring the equipment and tools used to maintain articles are those recommended by the article's manufacturer or the equivalent as accepted by the FAA.

NOTE: The basis of equivalency is the requirement that the article meet the manufacturer's standards and specifications in all respects regarding tolerances, repeatability, and accuracy.

NOTE: This section is not intended to discuss industry standard tools and equipment (i.e., wrenches, multimeters, sockets, etc.) that are manufactured to a recognized industry standard.

NOTE: Designated Engineering Representatives (DER) may not approve or determine equivalency of tooling and test equipment. Neither the FAA nor a DER may approve equipment and / or test apparatus. The FAA and DERs may only make an acceptance of functional equivalency for special equipment or test apparatus. It is important to emphasize that the burden of demonstrating equivalency is borne by the repair station—not the FAA.

(2) Verify that if the repair station manufactures test and measuring equipment to be used as an equivalent piece of equipment for one recommended by an articles manufacturer that it meet the calibration standards recommended by the manufacturer of the article being measured or tested. This type of calibration would be expected to be traceable to a standard acceptable to the FAA.

D. Control, Maintenance, and Storage. Review the parts of the RSM/QCM describing the system and procedures for the control, maintenance, use, and storage of the equipment and tools used to maintain articles.

(1) Verify that:

(a) The repair station is following its system and procedures in the RSM/QCM for the control, maintenance, use and storage of the equipment and tools used to maintain articles.

(b) The repair station has the equipment and tools necessary to perform the maintenance, preventive maintenance, or alterations under its repair station certificate; and

(c) Equipment and those tools are located on the premises and under the repair station's control when the work is being done.

(2) Also consider any of the following:

(a) Does the repair station have the maintenance and service manuals for all equipment and tools used to perform the maintenance, preventive maintenance, or alterations under its repair station certificate?

(b) Does the repair station fulfill the tool and equipment manufacture's requirements for control, maintenance, use and storage?

(c) If the repair station does not own the equipment and/or it is not kept at the facility:

- How the equipment is obtained (i.e., lease, rental, etc.)
- How the repair station ensures the equipment is on the premises and under the repair station's control at the time the work is being performed
- How the repair station ensures that the department responsible for

calibrating leased tools and equipment is identified

E. Test Cell. Review the RSM/QCM section describing the system(s) and procedure(s) necessary for correlation, operation, design, and modification of test cells. Verify that:

(1) The repair station is following the system and procedures in the RSM/QCM for the control, maintenance, use and storage of the equipment and tools used to maintain articles.

(2) The test cell conforms to the description in the RSM/QCM to include:

- An accurate description of the system(s) and procedure(s) to ensure test cell correlation, operation, design, and modification.
- A description of the system(s) design, operation, configuration, and construction of test cell, and test hardware, for operation and performance.

(3) The correlated test cell provides a means of ensuring article(s) meet minimum test requirements.

(4) That the test cell instrumentation is calibrated to a standard acceptable to the FAA.

(5) That when repairs or structural modifications have been made to an existing test cell that significantly effect performance, test cell correlation or re-correlation should be accomplished.

F. Analyze Findings. Upon completion of the inspection, record all deficiencies; determine the appropriate corrective action(s).

G. Conduct Debriefing. Brief the certificate holder on the inspection results. Discuss any deficiencies and possible corrective actions.

7. TASK OUTCOMES.

A. Complete PTRS.

B. Complete the Task. Completion of this task will result in the following:

- Send a letter to the operator documenting all deficiencies
- Initiate an Enforcement Investigation Report (EIR) if necessary

C. Document Task. File all supporting paperwork in the certificate-holder's office file. Update the Vital Information Subsystem as required.

9. FUTURE ACTIVITIES. Schedule and conduct followup inspections as applicable.